Empirical Analysis of Credit Asset Securitization's Risk Effect on Commercial Banks

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Abstract: The article selects the relevant data of 32 listed banks in China from 2013 to 2018, and analyzes empirically the impact of credit asset securitization (CAS)on the risk of Chinese commercial banks. The results found that the influence of the securitization of credit assets of commercial bank's CAR are significantly positive correlation, namely the securitization of credit assets will increase the CAR of commercial Banks, reduce the risk of the bank, and the effect of large Banks are more prominent.

Introduction

Research Background. The emergence of CAS as a new financial method has promoted the huge development of global capital markets. Commercial banks can revitalize funds through credit asset securitization, enhance liquidity, and optimize banks. To improve the capital structure, diversify capital transfer risk and reduce risks, and reduce financing costs. In contrast, the development of asset securitization market in China is relatively late. After China has vigorously promoted the institutional reform of the China banking, in order to keep up with the trend of world financial development, Chinese economic theorists and banking supervision departments are constantly exploring new businesses that can stimulate the vitality of banks to better promote China's economic development. In view of this, this paper combines the development status of asset securitization in China, analyzes the data of commercial Banks and their credit asset securitization business, empirically tests whether credit asset securitization reduces the risk level of commercial Banks in China. Securitization of credit assets can package and restructure credit assets so as to transfer credit risks. This method is more active and flexible because of information asymmetry in the market, and the initiator can obtain corresponding information advantages to transfer and disperse risks.

Literature Review. Reinhart and Rogoff (2008) made a comprehensive analysis of the causes of the us financial crisis. They believed that credit asset securitization was the "culprit" of the financial crisis, because commercial banks used housing mortgages as basic assets for asset securitization and transfer part of the credit risk to investors, and the further securitization of credit assets that are already high risk, the step-by-step superposition has led to the continuous expansion of credit risk in the capital market and financial markets, and ultimately led to the US subprime mortgage crisis break out. Casu (2010) studied data on the CAS of bank of America holding companies from 2001 to 2007. The research results show that the higher the degree of asset securitization of a commercial bank, the lower its risk-weighted asset ratio, which reduces the commercial bank's holdings. The author believes that the risk isolation mechanism of asset transfer. The negative relationship is more significant only in the two categories of home equity loans and home mortgage loans. In the case where the level of asset securitization is too high, then banks with larger asset sizes can perform credit enhancement of credit asset securitization of lower-credit basic assets, recover funds, revitalize assets, increase the CAR, and reduce Bankruptcy risk. Research by Lejard (2015) shows that CAS can transfer banks' risky assets off-balance sheet and use obtained liquid funds for other financial business activities, making China's banking industry and financial industry more active.

In our country, Li Zhihui, Huang Lu et al. (2016) used data from large commercial banks in the

United States from 2003 to 2014. The results show that different bank assets have different responses to credit asset securitization. Although the impact levels are different, they are all positive impacts, which can enhance the overall operational stability of commercial banks Mo Yang (2018) used data from 46 commercial banks in China from 2010 to 2015 to construct a panel data model from the perspective of liquidity, and explored the impact of asset securitization on the distortion of bank motivation. The conclusion shows that asset securitization is by transferring banks risks. However, it is precisely because of the development needs of China's credit asset securitization market that this is a subject of great significance. Although we cannot conduct more accurate empirical research, it also has certain guiding significance

Research Design

Data sources. Considering the development of China's asset securitization market and the availability of data, This paper adopts the CAS data of 32 listed Banks from 2013 to 2018. The individual data obtained are mainly from the annual reports of listed companies; the data related to the asset securitization business are mainly from the Choice database and China Asset Securitization Analysis Network: the macro data are from the National Statistical Yearbook and the National Bureau of Statistics. In the selection of sample Banks, listed Banks with credit asset securitization business were selected according to the availability of data, but not all Banks, which may lead to certain limitations of empirical results.

Variable Selection. Explained variable: Capital adequacy ratio (CAR): The ratio of total assets to weighted risk assets. The larger the ratio, the less the bank's risk of bankruptcy and the lower the level of risk

Explanatory variables: SEC, The number of CAS issuances by banks in the year. SAR, The ratio of a bank's total credit asset securitization issuance to that year's total loans. ABS, the bank's value for at least one single credit asset securitization business in the current year is 1, otherwise it is 0.

Control variables. SIZE, LnSize. A relatively large bank has a comprehensive business and a sound internal control operation system, so it has a certain risk control capability. Non-performing loan ratio (NPLR): The security status of bank loans and measures the degree of non-performing loans of banks Deposit-loan ratio (LDR): The ratio of loan balance to deposit balance. The higher this indicator, the higher the level of risk. Financial Deepening Indicators (M2 / GDP): Macroeconomic control variables. Globally, asset securitization is a financial business innovation that will only be carried out after a country's financial system is highly developed. The reason why choosing a financial deepening indicator is better than simply choosing GDP is that China's financial development and GDP as a traditional manufacturing power do not match in essence. Including the ratio of the money supply indicator M2 to GDP into the regression model has more appropriate economic significance.

Model Settings

$$CAR_{it} = \alpha_1 SEC_{it} + \beta_1 CONTROLS_{it} + \mu_{1t} + b_1 + u_{1it} \quad (1)$$

$$CAR_{it} = \alpha_2 SAR_{it} + \beta_2 CONTROLS_{it} + \mu_{2t} + b_2 + u_{2it} \quad (2)$$

$$CAR_{it} = \alpha_3 ABS_{it} + \beta_3 CONTROLS_{it} + \mu_{3t} + b_3 + u_{3it} \quad (3)$$

$SEC_{it}$is the number of asset securitizations of each commercial bank in a certain period, and SAR_{it}t represents the asset securities of each commercial bank in each period Change rate, ABS_{it} represents the value of the dummy variable of each period, $CONTROLS_{it}$ represents the control variable of each period. μ_{nt} is a random variable, and $u_{nit}$is the residual term, b is the intercept, where n = 1, 2, 3.

Analysis of Empirical Results

Descriptive Statistics. This article defines the listed state-owned commercial banks as national

banks, with a total of 13 banks, which are designated as Group 1; the remaining city commercial banks and rural commercial banks are defined as local banks, with 19 banks, which are designated as Group 2.

It can be found that, for the explanatory variable CAR, the average value of group 2(13.06%)is higher than the group 1's (12.69%), which indicates that the average level of CAR of local banks is relatively high; The average value of group 1(SEC 10.06, SAR 0.0059, ABS 0.79) is obviously higher than the group 2's (SEC 1.42, SAR 0.0049, ABS 0.31)and exceeds the average value of the entire sample, indicating that national banks are the main participants in China's CAS market. This is consistent with China's CAS market. National banks have stronger capital and broader operations, and will have more risky assets. Therefore, the capital adequacy ratio will be lower than that of local banks. Leaders will also actively respond to national policies and participate more actively in the construction of China's CAS market. For reasons of space, do not put the table.

Correlation Analysis. The correlation coefficient analysis is shown in Table 1. The absolute value of the correlation coefficient between the variables is basically below 0.5. Although there are very few cases where the absolute value of the coefficient exceeds 0.5. it can still explain that there is no collinearity between the variables selected in this article, and a model can be established and empirical research. Through correlation analysis, we can initially obtain that the correlation coefficients of SEC, SAR, ABS and CAR are positive.

Empirical Results. The Hausman test was used to estimate the panel data model, and the results showed that the test did not pass, so a random effect model was used for this regression. The regression results for the entire sample are shown in Table 2.

The CAR of commercial banks is significantly positively correlated with SEC. By analyzing the regression coefficient and significance level of explanatory variables, we know that the securitization of credit assets will improve the CAR of Banks .CAR is a negative indicator of bank risk level .In other words, Banks can reduce their risk level by actively carrying out securitization business of credit assets This also verifies that the asset securitization business theoretically has functions and effects such as revitalizing assets and increasing the CAR. This is consistent with the conclusions of domestic scholars (Lingbai Chen, 2014) [6] based on the regulatory capital arbitrage hypothesis that the development of CAS business can improve the low CAR of Chinese commercial banks. it can be known that, for banks with large asset scales, because of their large total assets, according to the composition principle of the balance sheet, their debt scales are also relatively large. In the case where the level of asset securitization is too high, then banks with larger asset sizes can perform credit enhancement of credit asset securitization of lower-credit basic assets, recover funds, revitalize assets, increase the CAR, and reduce Bankruptcy risk.

Judging from the regression results of the control variables, some other factors will also affect the CAR of China's commercial banks. Such as, LDR, M2 / GDP .That is, the higher the loan-to-deposit ratio, the richer the macro economy, The higher the CAR. The regression coefficient of SIZE is significantly negative, indicating that the larger the bank's assets, the lower its CAR This is same with the previous descriptive statistics. National banks have lower capital adequacy ratios than local banks. And R ^ 2 are all greater than 0.7, The higher the degree of regression model fitting, the more real the empirical results.

Robustness Test. This paper tests the robustness of the empirical results by group regression. According to the classification of Chinese commercial banks in this article, regression tests were performed on the national and local bank subsamples. Before the panel model regression, according to the Hausman test result, the P value is 1, accepting the null hypothesis, and it is determined that the random effect model is used for robustness test. The results show that the signs of the regression coefficients of all explanatory variables are consistent with the full sample, and they are also consistent in significance, indicating that the above discussion is robust. As far as control variables are concerned, the LDR, M2 / GDP, and SIZE are consistent with the full sample results, further verifying the robustness of the conclusion.

In Table 3, models 1 to 3 are the regression results of national bank group1, and models 4 to 6 are the regression results of local bank group 2. According to the results, SEC and ABS are both

significant positive correlation, and the coefficient value of the national bank group1 must be larger than the local bank group2. This shows that the bigger the bank's assets, the greater the impact on CAR. Among the control variables, the SIZE coefficient in team1 is negative and significant, and the SIZE regression coefficient in group 2 is positive and significant. For national banks, the larger the asset scale, the lower the CAR, which is also consistent with the previous results. The test results further prove the robustness of the model, method, and conclusion. From the perspective of robust empirical results, the regression results are basically consistent with the previous results

The impact of CAS on the CAR of commercial banks is a positive relationship, but due to the different asset sizes, the effect is different. For national banks with relatively large asset sizes, the impact of CAS is more Significantly, the effect is greater.

Research Conclusions

This paper analyzes the credit asset securitization business data of China's commercial banks through research and empirical analysis of the impact of CAS on the risk level of commercial banks. It was found that the risk level of commercial banks has declined due to the CAS business, and banks with larger assets have a greater impact. Due to the activeness of large-scale banking business, it can more benefit from the risk reduction of developing credit asset securitization business. From the previous research, it can be known that, for banks with large asset scales, because of their large total assets, according to the composition principle of the balance sheet, their debt scales are also relatively large. In the case where the level of asset securitization is too high, then banks with larger asset sizes can perform credit enhancement of credit asset securitization of lower-credit basic assets, recover funds, revitalize assets, increase the CAR, and reduce Bankruptcy risk. The reason may be that the national banks have richer base assets and have more space to operate, which can get more benefits.

Appendix

Table 1. Correlation analysis of variables

Correlation	CAR	SEC	SAR	ABS	NPLR	LDR	SIZE	M2/GDP
CAR	1.00							
SEC	0.06*	1.00						
SAR	0.04*	0.50***	1.00					
ABS	0.11*	0.52***	0.56***	1.00				
NPLR	-0.47***	0.09	0.08	0.06	1.00			
LDR	-0.35***	0.28***	0.01	0.12*	0.35***	1.00		
SIZE	0.12*	0.44	0.08	0.39***	-0.09	0.43***	1.00	
M2/GDP	-0.50***	0.23	0.11***	0.25***	0.46***	0.12*	0.16***	1.00

Table 2. Impact of credit asset securitization on CAR

Variable	Model a	Model b	Model c
C	5.0984***	3.9133***	4.4876***
	(2.5564)	(1.9295)	(2.1586)
SEC	0.0206***		
	(2.7906)		
SAR		6.8765***	
		(2.7723)	
ABS			0.2255***
			(2.2792)
LDR	0.0245***	0.0312***	0.0302***
	(2.7331)	(3.2666)	(3.2130)
NPLR	0.2963	0.3026	0.2721

	(1.1724)	(1.1333)	(1.0283)
SIZE	-0.1104**	-0.0499***	-0.0788***
	(-1.715)	(-2.7700)	(-2.7520)
M2/GDP	3.3636***	3.4747***	3.3371***
	(3.1177)	(3.0668)	(2.9602)
R-squared	0.7164	0.7248	0.7183
observations	192	192	192

Table 3. Grouped robustness test

	Model1	Model2	Model3	Model4	Model5	Model6
C	-12.4150***	-12.9814***	-11.7057***	6.4475***	6.4928***	6.3987***
	(-2.8844)	(-3.0355)	(-2.8039)	(2.4006)	(2.4213)	(2.3654)
SEC	0.0130***			0.0178***		
	(2.0677)			(2.3782)		
SAR		38.8806***			4.8735***	
		(2.0884)			(2.4341)	
ABS			0.7076***			0.0822***
			(2.7461)			(2.3611)
LDR	0.0300***	0.0307***	0.0292***	0.0155	0.0157	0.0158
	(3.1629)	(3.2070)	(3.1918)	(1.2380)	（1.2142）	（1.2512）
NPLR	-0.3373	-0.3300	-0.5493	-0.1829	-0.1901	-0.1898
	(-0.6314)	（-0.6123）	（-1.0696）	（-0.6184）	(-0.6340)	(-0.6371)
SIZE	-1.5750***	-1.6683***	-1.5992***	-0.3835***	-0.3855***	-0.3823***
	(-7.0924)	(-7.3289)	(-7.0059)	(-2.5539)	(-2.5241)	(-2.5232)
M2/GDP	2.8348	2.5562	2.3115	4.2518***	4.2248***	4.2567***
	(1.3031)	(1.1556)	(1.1002)	(2.8118)	(2.7678)	(2.7901)
R-squared	0.6278	0.6221	0.6306	0.7623	0.7448	0.7536
observations	78	78	78	114	114	114

*** means significant at the 1% level, ** means significant at the 5% level, * means significant at the 10% level.

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